ENERGY EFFICIENCY SECTOR: ENERGY WATER CONNECTION PROGRAM

♦ CALIFORNIA

Using Technology to Conserve Both Energy and Water

As demand for water has grown, the Madera Valley Water Company (MVWC), about 20 miles north of Fresno, has initiated efforts to integrate new technologies and operating techniques to expand output by optimizing the existing system. This private water company serves their 1,600 residential customers exclusively with groundwater drawn from wells within their distribution system, and any increase in capacity must come from within the system. In response to this need and to save money, the MVWC installed variable frequency drives and programmable logic controllers on one current and one existing well, which allows them to operate their pumps at the minimum capacity desired by their customers and reduce wear and tear on the equipment. They also installed energy efficient motors to reduce pumping energy requirements. The improved efficiency enabled MVWC to increase its pumping and still maintain a profit, thereby increasing the quantity of water that could be profitably removed.

Results:

Annually, the energy efficiency improvements at MVWC have reduced energy use by over 190,000 kWh. As a result of this decreased energy consumption, annual GHG emissions have been lowered by about 29 MTCE.* The offset electric generation also accounted for an approximate emissions reduction of 0.0027 MT** of SO_2 and 0.032 MT** of NOx per year. In addition, the reduced energy use enabled the Madera Valley Water Company to increase its annual water capacity by 113 million gallons, an increase in capacity of almost 22%. The annual savings from these improvements are estimated at $19,000.

Greenhouse Gas Reductions	Annual Savings	Increased Water Capacity
29 MTCE*/yr	$19,000/yr	113 million gallons/yr

Principal Actors:

The Madera Valley Water Company with the help of a contractor initiated these energy efficiency improvements.

Additional Information:

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This case study is based on information provided by Rodney Smith, Madera Valley Water Company and information in *California Energy Commission Success Story*, retrieved on 17 August 1999 from www.energy.ca.gov/water/showcase/madera.html.

* Original data have been converted from kWh to Metric Tons of Carbon Equivalents (MTCE) based on the conversion factor 0.154 MMTCE / GWH (The Cadmus Group, Inc., *Regional Electricity Emission Factors Final Report*, 1998, Exhibit 6).
** The following conversion factors were applied to the original data: 0.014 MT SO_2 / GWh, 0.168 MT NO_x / GWh. These are based on state specific factors from Emissions & Generation Integrated Database (E-GRID), EPA/Acid Rain Program.